Migration, Environment and Development : New Directions for Research

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1. Introduction

This paper highlights the linkages between environmentally induced migration and development, and discusses how environmental factors may influence the movement of people. Both climate change and migration and development are topics which are high on the policy agenda of many governments around the world. However, at present these two policy issues are by and large being discussed in separate policy fora. For example, at the UN General Assembly High Level Dialogue on International Migration and Development (HLD), held in September 2006, and the Global Forum on Migration and Development (GFMD), held in July 2007, there was barely any discussion of the linkages between migration, environment and development. Similarly, the report of the Global Commission for Migration published in 2005, which outlines the key migration challenges facing the international community in the coming years, includes virtually no discussion of environmentally induced migration.

This neglect is somewhat surprising given that it is widely recognized that environmental migration is likely to have the greatest impact on developing countries. As early as 1990, the Intergovernmental Panel on Climate Change (IPCC, 1990:20) warned that the greatest single impact of climate change could be on human migration – with millions of people displaced by shoreline erosion, coastal flooding and severe drought.

Parts of the earth are becoming less habitable due to factors such as climate change, deterioration of agricultural lands, desertification, salinization, water pollution, and natural and human-made disasters. All regions are likely to experience some adverse effects of climate change, but less-developed regions are especially vulnerable because a large share of their

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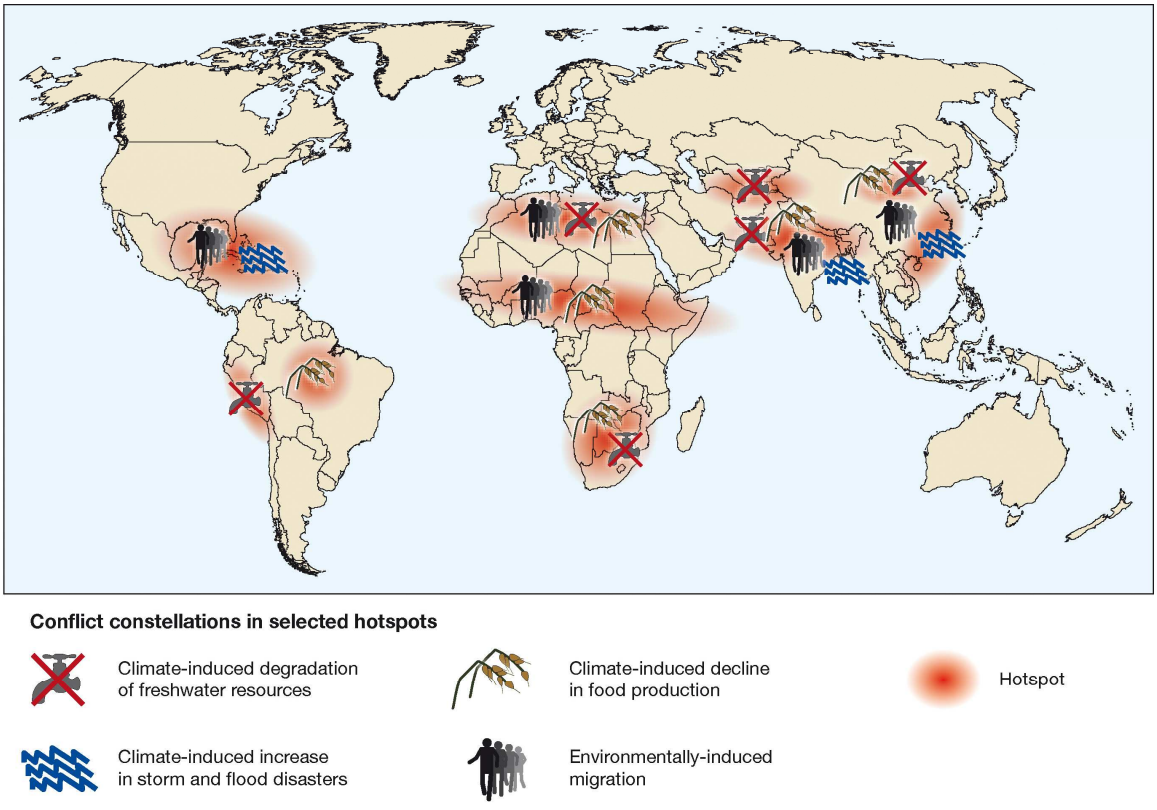
economies are in climate–sensitive sectors and their adaptive capacity is low due to low levels of human, financial and natural resources, as well as limited institutional and technological capability (IOM 2008a.).

Broadly speaking two factors may cause a deterioration of the environment that impels people to leave (1) a major natural disaster (such as an earthquake, flood, volcanic eruption or hurricane (2) a gradual, cumulative deterioration in the living and working conditions of a place. Some environmental disruptions, such as hurricanes or earthquakes, occur with little or no warning and require that people move quickly to get out of harm's way. Others develop more slowly and provide time for people to assess their options, leave in an orderly manner and even bring resources with them (I0M, 1992). Increased migration can contribute to further environmental problems, but it can also be a coping and survival strategy for those who move. Indeed, migration—whether permanent or temporary, whether national, regional or international—has always been a possible coping strategy for people facing environmental changes such as sudden disasters or cyclical climate conditions. Faced with an unprecedented scale of environmental change, migration may be an adjustment mechanism of first resort, or a survival mechanism of last resort.

Conversely, changes in migration patterns can have a negative impact on the environment. When large numbers of people more from one area to another, they can easily upset the delicate environmental balance of their new location (IOM, 1992).

Figure 1: Environmental hotspots and migration



Their remittances dwarf official development assistance and currently approach 300 billion dollars per annum (Ratha and Xu 2008). In the future, people facing the threat of environmental change and those who have become migrants because of it may help shape effective adaptation to climate change. This policy paper briefly explores some of the main issues related to migration

and climate change, and points towards policy alternatives to address environmentally induced migration.

The topic of environmental migration and its implications for development is not a new issue, for example, IOM organized conferences and prepared publications about this subject in the early 1990s (IOM, 1992). However, during 2007-2008 there has been renewed policy interest in the subject of environmental migration, with several policy fora focussing on this subject. In November 2007, for example, the member states of IOM, more than 120 countries, discussed a policy paper about environmental migration at IOM's Council, its governing body.

There is a growing awareness on the need for much better evidence if we are to develop a global strategy to plan for, adapt to, and mitigate the processes and effects of environmentally induced migration. The main objective of this article is discuss what might be some of the priority areas for further research on the migration and environment nexus, focusing in particular on evidence needed to promote sustainable development. The paper is organized around three key sections.

First, we present an overview of research on migration, environment and development. Second, we outline some of the results from a new study based on fieldwork conducted in 24 case study countries around the world (the EACH-FOR project). Third, we will discuss some possible ways in which to develop a global research agenda on migration and the environment.

2. Research on Migration, Environment and Development

Recently, an expert group in Germany noted that:

"Environmentally induced migration" – or "environmental migration" for short – has so far received little attention from a scientific perspective…. Patterns of cause and effect relating to environmental migration remain largely unexamined" (German Advisory Council on Global Change, 2007).

Although this statement is broadly true, there are a significant number of studies and publications which have focused on the subject of environmental migration. Much of this research, however, has been written by those working in the field of environment studies and many reports have focused more on the impact of migration on the environment, rather than the implications of environmental changes on migration (Hugo, 1996, 2008). Moreover, there has been an overwhelming tendency to focus on the negative consequences of migration for the environment, with fewer studies exploring how migration can be a coping strategy and benefit development (Laczko, 2008).

There is little consensus among researchers about the relationship between environmental change and migration. As Fraser, et. al (2008), point out in a recent paper the research literature on migration tends to fall into two broad categories: (1) work done by "minimalists" who suggest the environment is only a contextual factor in migration decisions and (2) "maximalists" who claim that the environment directly causes people to be forced from their homes.

There are at least three areas of disagreement among researchers – definitions, data and drivers – what we might call three "Ds". These three "Ds", refer to three key questions. How do we describe people who move for environmental reasons ? What is the scale of this movement of people ? To what extent can environmental factors be isolated and be shown to be a primary cause of migration ?

2.1 Definitions

Definitions are crucial in guiding the policies of governments and international agencies in regards to population movements. The generation of statistics is also dependent on how we choose to define "environmental migration". Without a firm definition of who is an "environmental refugee or environmental migrant", it is not easy to say that this type of population movement is increasing.

The term "environmental refugee" was first popularised by Lester Brown of WorldWatch Institute in the 1970s. Two seminal reports, one issued in 1985 by the United Nations Environmental Programme (UNEP) and the second in 1998 by WorldWatch, brought public attention to the issue of migration caused by the environment.

The UNEP report, prepared by Essam El- Hinnawi, described "environmental refugees" as:

"those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and /or seriously affected the quality of their life".

The term "environmental refugees" has been used to describe the whole category of people who migrate because of serious environmental disruptions. This broad definition, while evoking an image that has brought public attention to the issue, is sufficiently precise for addressing the various types of movements that develop because of environmental degradation. Bilsborrow (2002) distinguishes between three categories of environmentally induced migration and argues that the category referring to "refugees" refers only to a small proportion of persons who move for environmental reasons.

Three categories of environmentally induced migration are identified by Bilsborrow (2002):

(a.) "Environmental refugees/forced migrants" who are compelled by environmental conditions to seek temporary asylum in another, usually neighbouring country".

(b.) "Displaced persons" , people forced to migrate within their country by environmental disasters or civil strife. Most of the time, major natural disasters produce internally displaced persons.

(c.) "Other persons" who migrate from rural areas within their own country *at least partly* for reasons of environmental deterioration.

The latter group account for the largest number of "environmental migrants", but have received little attention, partly because migration research has tended to focus on international rather than internal migration, and partly because this movement of people does not usually involve persons in desperate need of assistance as in the case of natural disasters.

Many other experts, have strongly criticised the use of the term "environmental refugee". For example, Castles, writing in a UNHCR publication in 2001 commented " "the term environmental refugee" is simplistic, one-sided and misleading. It implies a mono-causality which very rarely exists in practice", (Castles, 2002, p.8). The term "refugee" has a precise meaning in international law. A refugee is defined by the 1951 UN Convention relating to the Status of Refugees and persons who flee due to environmental problems do not fall under this definition. It is also an inaccurate term given that the bulk of "environmental migration" tends to occur within countries rather than between countries (Hugo, 2008).

To use the term refugee implies that a similar response should be provided to environmental refugees at to those refugees that have been politically persecuted and crossed international borders. Many have argued that this should not be the case, and that it would be more constructive to talk of "environmental migrants" (Stranks, 1997).

IOM has developed a working definition of "environmental migrants" which describes them as follows:

"Environmental migrants are persons or groups of persons who, because of sudden or progressive changes in the environment affecting adversely their livelihoods, move from their habitual homes to temporary or durable new homes, either within their country or abroad" (IOM, 2007).

This definition recognizes that changes may be progressive or sudden, that movement can be internal or international.

Despite the fact that there has been little agreement as to how to define an "environmental refugee", there are numerous references in the research literature on migration and the environment to tens of millions of people being displaced due to environmental factors.

2.2 Data

There are widely varying estimates of the likely number of people who may be affected by environmental migration. Jacobson (1988) suggested that "environmental refugees had become the single largest category of displaced persons in the world and estimated that there were 10 million in the late 1980s. More recent estimates suggested that numbers may be as high as 25 million (Myers, 1996). Furthermore, Myers (1996) forecasted that sea level rise alone will cause 200 million environmental refugees by 2050. Such projections, however, are based on little evidence including no identification of any specific populations that have been forced to relocate from areas that have already experienced sea-level rise (Black, 2001).

Similarly, advocates of the environmental refugee concept often make no direct link showing that desertification causes displacement. They tend to rely instead on correlations between areas vulnerable to, or suffering from, desertification and areas from which migrants originate (Vine, 2006). In some cases those said to be victims of desertification may be the victims of expropriation by eviction and government land privatization.

Migration is one of many potential responses to environmental changes, such as increased flooding, but such projections fail to take into account the possible role of adaptation. In a study of responses to floods in Bangladesh, Haque and Zaman (1993), point out that there are a range of adaptive responses by local populations, which include forecasting, the use of warning systems, flood insurance, relief and rehabilitation efforts.

Collecting accurate statistical data on "environmental migration" has thus far proven to be extremely difficult, few of the existing statistics have been empirically verified and as such, any figures must be treated with a great deal of suspicion.

However, the data relating to the number of persons forcibly displaced by natural disasters/extreme environmental events is more reliable. The number of people affected by natural disasters has accelerated in each decade since the 1960's (IOM, 1992). During the 1960's, 28 million people were affected by such disasters while 64 million were affected during the 1980s. Poor people in developing countries are the most severely affected by natural disasters (IOM, 1992). For example, Asia has been affected by almost half of all natural disasters,

namely 43 %, while accounting for almost 70 % of all lives lost between 1990 and 1999 (IOM, 2007). What is not known, is to what extent do such disasters cause people to migrate and whether such migration is temporary or permanent, internal or international (Hugo, 1996, 2008).

2.3 Drivers of environmental migration

Another area of disagreement concerns the relative importance of environmental factors compared to "intervening factors", such as the economic, political and social situation in a country. Although many experts accept that environmental degradation and natural disasters are important factors in the decision to migrate, their conceptualization as a primary cause of forced displacement has been questioned (Black, 2001). This does not mean that environmental factors are unimportant. Rather it means that environmental factors are closely linked to economic, social and political ones. According to this perspective, it is too simple to say country x has environmental problems and therefore will have large numbers of environmental migrants.

The decision to migrate is seldom a straightforward one. While a specific event may precipitate the actual movement, a range of often complicated factors usually affects the final decision to become uprooted (IOM, 1992). People will often remain where they are trying to cope with the impacts on an environmental disruption until they are unable to do so any longer. The political and economic situation of their countries, are factors that ultimately affect their capacity to remain in their own homes. Other factors are obstacles to movement including the unwillingness of the areas to which they could migrate to receive them.

All this suggests that "policy matters" and a strong, efficient state can deal with environmental challenges much better than a weak state (Castles, 2002). The key policy implication is that we not only need to understand environmental change itself but also the ability of different communities to cope with it. For example, the poor are most affected by natural disasters for reasons having to do with poor housing quality, weak infrastructure, limited choice about where one lives, and limited disaster and prevention services. The impact of disasters and the displacement they produce are heavily influenced by political and economic factors. Poverty shapes the vulnerability of people to disasters and thus to migration.

The consequences of environmental changes are also likely to depend on social, political and economic factors. In a relatively poor developing country, earthquakes have caused thousands of deaths and displaced many more amidst massive destruction. By contrast in rich countries earthquakes of equal or greater magnitude have caused fewer deaths and displacement. The environmental phenomenon is the same but its effects, including the extent of displacement is often very different.

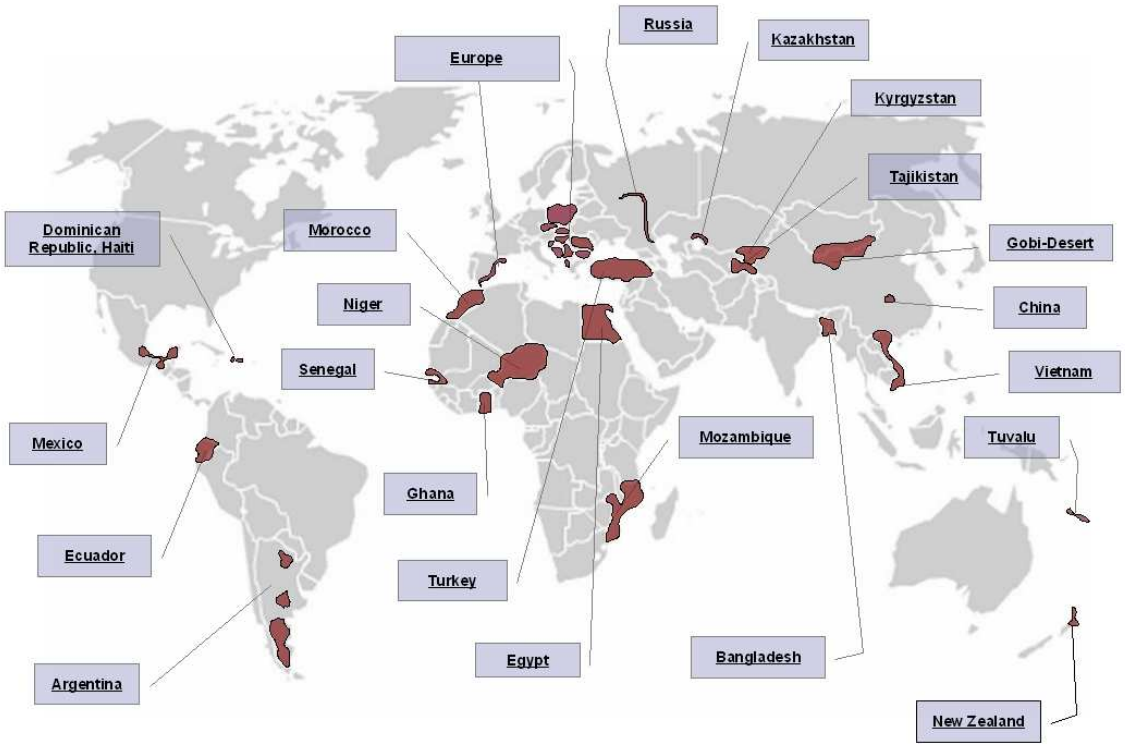
It is not natural disasters themselves that generate risk but rather the state of human development, which shapes vulnerability to natural hazards and exacerbates their effects and consequences (IOM, 1992). The level of development is a critical factor and disasters have a disproportionate effect on developing countries for a variety of reasons including the lack of resources to prevent the effects of natural disaster. When a disaster strikes, it will undermine the development of affected individuals and communities and if large-scale enough or recurrent, may even undermine the overall national economy and development. A natural disaster taking place in a developing country which lacks the economic resources to meet the needs of its citizens at the best of times will no doubt undermine the quality of life of affected individuals and communities.

3. Preliminary fieldwork results

EACH-FOR was designed as an empirical research project to generate original, global information about the links between environmental change and migration. Figure 4 shows the

areas where EACH-FOR fieldwork is conducted. EACH-FOR covers the regions Europe and Russia, Newly Industrialised States (NIS) and Central Asia, Asia and Pacific Region, Middle East and Northern Africa, Sub-Saharan Africa, and Latin America, where 23 countries are selected for the case studies of the project.

Figure 2: EACH-FOR project case study research locations



The countries were selected for in-depth analysis because of four factors:

- the presence of documented environmental degradation,
- the sensitivity of social and political processes to these environmental changes,
- the dependence of people on the environment for their livelihood and
- documented migration dynamics.

The kinds of environmental degradation considered in the case studies include rapid-onset environmental stressors (such as extreme weather events like floods and cyclones) and slow-onset environmental stressors (such as water scarcity, desertification, soil degradation, deforestation). This paper reports on findings from Egypt, Mozambique, and Vietnam because of the special relevance to climate change and human security questions illustrated in these areas.

The EACH-FOR project conducted fieldwork (highlighted in the map) to address the following eight research questions:

1. To find out **who** has been migrating away from situations of environmental degradation/change
2. To find out **where** migrants are coming from and where are they going to,
3. To find out **why** people have migrated

4. To find out **how** environmental degradation interplays with other social, economic and political factors in making migration decisions
5. **Obstacles that prevent migration**. To find out what might have prevented people from migrating in the first place (i.e. what assistance was needed, what was lacking?)
6. **Coping capacity/adaptation** To find out why people who remained in areas of environmental degradation/ change remained in their location while others migrated (Why did some remain?)
7. To find out **how the migration activities occurred** (choice of destination, what networks were used to facilitate migration?)
8. To identify the **perception** of environmental degradation that triggers people to move. NOTE: Originally the wording included "level of environmental damage," which indicates thresholds or sensitivity—that is different from perception so this paper excludes it.

In order to address these research questions, researchers carried out expert interviews with NGO representatives, government officials, representatives from international organizations and academics from the migration, environment, disaster relief and agriculture sectors. Researchers also conducted a questionnaire and interviews with migrants to identify whether there were any underlying environmental factors underlying migration decisions. A comparable questionnaire and interviews were also conducted with people living in areas with documented environmental problems to assess the degree to which these groups were affected by environmental problems and whether migration is an option in the future. Case study sites within Egypt, Mozambique and Vietnam were identified by pin-pointing those locations facing environmental stressors such as flooding or desertification and hence were areas were people were most vulnerable to environmental stressors.

3.1 Egypt

Egypt is a country of vast arid areas, and a narrow neck of very fertile land around the Nile River and Delta. As much as the Nile River has been a generous water resource, the Egyptians are suffering from water shortage, partly, due to the continuous increase in population at high rates. Taking the expression 'water shortage' more broadly, it would encompass the access to clean water that is suitable for drinking and irrigation; unfortunately, Egypt has been notorious for water pollution, since the Nile and its canals have been subject to receiving industrial, agricultural and domestic waste over the past decades. Poor water management due to inefficiency of the traditional gravity irrigation system, inadequate maintenance of irrigation and drainage networks as well as over abstraction of groundwater, especially in the newly reclaimed desert areas, are all factors that have magnified the problem. Another natural factor that diminishes the available fresh water is water salinity, a phenomenon that largely exists in the newly reclaimed desert lands that rely on groundwater.

Environmental problems, such as water shortage and land degradation are important challenges facing the Egyptians, given the rapid population growth. Fieldwork indicates that environmentally induced migration in Egypt is related primarily to water shortages and land degradation. Several compounding factors affect environmentally induced migration in Egypt:

- Whether or not the individual or family owns the land they live and work upon
- The degree of poverty and whether individuals or families can afford to move away, in terms of both financial and social assets (such as networks)
- Whether a government program for land development is in place that affects environmental quality, migration, or both

Environmentally induced migration occurs within Egypt, rather than across borders.
Environmentally induced migration appears to be an alternative of last resort for poor Egyptians

facing extreme environmental degradation. In contrast, rapid onset events such as earthquakes or floods have the potential to move larger numbers of people in a short time period.

3.2. Mozambique

Climate change is becoming increasingly problematic for the people of Mozambique who were particularly affected by extreme floods of the Limpopo River in the south of the country in 2000 and by the extreme floods of the Zambezi River in Mozambique's central region during 2001, 2007 and 2008. In these three years, rains caused flooding along the Zambezi River in central Mozambique and in 2007 tropical Cyclone Favio increased the number of homeless people in Mozambique following the flooding of the Zambezi River.

A central question for Mozambique, but relevant to other countries facing environmentally induced migration, is the degree to which environmental factors contribute to displacement or migration today and more migration in the future. As in Egypt and Vietnam, environmental stressors (particularly flooding) contribute to migration and displacement in Mozambique. For the case of the Zambezi River Valley, following a flood people are displaced during the flood emergency period. Following re-occurring flooding events, people are relocated on a permanent or semi-permanent basis. Along the Zambezi River Valley, temporary mass displacement that is taking on permanent characteristics can be observed. There is no evidence yet for large-scale international migration resulting from the Zambezi River flooding and so far flood-affected groups are yet not prone to moving to urban agglomerations. Moreover, the government of Mozambique is trying to develop rural areas by providing the essential infrastructure and giving people incentives to produce more sturdy houses within the resettlement process.

Resettlement as an option to manage climatic threats in Mozambique has the benefit of removing people from the physical danger of extreme floods. However, resettlement can lead to other environmental, social, and economic difficulties. Farmers are moved away from the fertile lands on riverbanks and to higher, drought prone areas. If livelihoods are lost, relocated households remain dependent on governmental and international aid and remain very vulnerable to subsequent flooding events. As extreme weather events continue to impact Mozambique, the government of Mozambique will be faced increasingly with decisions about how to manage people at risk and on the move due to environmental factors.

3.3. Viet Nam

Field research conducted in Viet Nam examined the influence of environmental change (principally flooding) on migration in the Mekong Delta of Viet Nam. Flooding in the Mekong Delta is a regular annual occurrence and is an integral part of the livelihoods of the population living in the area. The regular flooding area of the Viet Nam portion of the Mekong Delta affects 40 percent (16000 km^2) of the land area in 9 provinces, constituting approximately 53 percent of the population (9 million people) of the Mekong Delta (Pham 2007 pers. comm.). The flood depth during the flooding season ranges between 0.5 – 4.0 metres and is known as the 'nice' flood. Flood levels reaching approximately 4.5 metres or higher are considered to be 'disaster' floods.

The following linkages between flooding and migration were found from this research study:

- During the flooding season, people undertake seasonal labor migration and movement towards urban centers to bolster livelihoods.
- That for those directly dependent on agriculture for their livelihood (usually rice farmers), successive flooding events leading to destruction of crops on more than one occasion can drive people to migrate elsewhere in search of an alternative livelihood.

- As an extreme coping mechanism, anecdotal indicators point to human trafficking into neighboring areas as one strategy adopted by families who have suffered from water-related stressors.
- The government as part of a flood management and environmental sanitation strategy is currently undertaking planned resettlement of people living in vulnerable zones along river banks

Natural hazards, in combination with the stress placed on the environment due to rapid socio economic development within Viet Nam and upstream South-east Asian countries, overlaid with the threats posed to Viet Nam by climate change, places Viet Nam's environment and those who depend directly upon it for their livelihood in a precarious position. In the face of environmental stressors, people in the Mekong Delta will adapt in various ways. One type of coping mechanism may be migration, particularly in light of the rapid socio-economic changes that Viet Nam is currently experiencing which will create stronger pull factors towards urban environments. Even for those people who will be potentially or are currently being directly affected by climate change e.g. those citizens living in the Mekong Delta, there is very little awareness of the concept of climate change and even the government in Viet Nam is only now beginning to grapple with this new information and the difficulties they face in dealing with such an issue.

Comparative fieldwork results

A comparative analysis of the field experience points towards three main results:

1. Environmental factors currently contribute to migration in cases observed; these environmental factors interact with many other factors to influence migration. The principle current pathway through which environmental change affects migration is through livelihoods. The more direct the link between environmental quality and livelihoods, the stronger the environmental push factor in migration choices.

2. Migration occurs after a certain ecological tipping point is exceeded; if environmental conditions worsen, interviewees remarked that they will migrate in the future. The ability to earn a livelihood in a given climate and environment is one of the determining factors that potential migrants are concerned about for the future. What is unknown is how mounting environmental pressures affect migration.

3. Government responses vary from incentives to mandated resettlement, with mixed results; in Egypt, constant internal migration results from environmental degradation and, ironically, the very programs designed to reclaim desert lands at the edge of the delta. Relocation programs also have their costs and benefits: The positive aspects of relocating people include moving them out of harm's way. The undesirable aspects of resettlement include exposing displaced people to the loss of livelihoods, debt, and social disarticulation without addressing the environmental stressor itself.

4. Towards a global agenda for research on migration and the environment

Beyond this preliminary fieldwork, much more information is needed about the multiple links between environmental change, migration, and development. To help fill these gaps in dialogue and scholarly work, a group of experts convened in Munich in April 2008 to define a global agenda for research on migration and the environment.

4.1 Munich Expert meeting and Environment and Migration Alliance

To address the need for more sound empirical research and identify priority areas of research relevant for policy-makers in the field of Migration and Environment, IOM together with UNU-EHS[1], and UNEP organized a research workshop which brought together 35 international experts in the fields of migration and environmental research. The meeting, which took place from 16 to 18 April 2008 in Munich, Germany, was hosted by the Munich Re Foundation (MRF) at the Munich Re headquarters and generously supported by the Rockefeller Foundation,

The main objectives of this workshop were to:

- Develop a **research framework** (identify key questions, research themes and innovative research methods needed for more accurate data collection and cross-cutting approaches to migration and the environment);
- **Compare perspectives** on migration, the environment, and social vulnerability across regions;
- **Identify priority areas** of research for policy makers;
- Create momentum among a core research network of experts through an **expert taskforce** to carry the research strategy forward;

4.2 Moving the research agenda forward

Experts at the Munich workshop identified key priority areas for research related to 3 thematic areas identified by IOM, UNU-EHS, and UNEP:

- Definitions and data;
- Factors driving environmental migration;
- Policy scenarios and migration consequences.

Definitions and data

Participants agreed that more work was needed to conceptualize environmentally induced migration, and to quantify migration responses to the impact of environmental change and degradation. Specific work in the following areas was recommended:

- *Definitions of environmentally induced migration*: Experts discussed the advantages and disadvantages of different definitions appearing in the literature and policy discourse. Definitions are the starting point for both research—which must define a phenomena before it studies and measures it—and policy, which requires a definition in order to assign responsibilities and design action. Experts noted that it is easier to identify environmentally induced migrants after rapid-onset events such as tsunamis or major storms. Longer-term environmental degradation interacts with migration in complex ways that make it difficult to clearly attribute why people are moving and whether they are environmentally induced migrants.
- *Currently existing data and statistical sources; a point of departure:* Resources such as national statistical institutes can provide relevant information at regular intervals, but these institutions do require assistance in improving data collection, data quality, and digitalization of data. Census data combined with GIS modeling can reveal relevant demographic structures, and over time may begin to reveal general patterns of migration flows and directions.
- *Correlate migration flow data with environmental variation over time:* It may be possible to use currently available data to identify the magnitude of flows of migrants. Research

[1] UNU-EHS is partner in the Environmental Change and Forced Migration Scenarios (EACH-FOR), funded by the European Commission´s 6th Framework Program. The project is a systematic attempt to detect the degree to which and the pathways through which environmental stressors affect migration.

might correlate estimated flows with environmental variation over time and across countries. Cross disciplinary studies could examine the same indicators and build consensus on models and methods (census data, early warning), and laws and policies which may impact both the environment and potential migration patterns (driving decisions at farm level that give rise to land management processes), etc.

- *A note of caution in measuring environmentally induced migration:* Experts underscored that care must be exercised in measurement attempts. For example, the complexity of meteorological scenarios and socio economic scenarios leave large opportunities for error. The extent to which the environment is the main push factor or one of many needs to be taken into consideration when measuring environmental migration. Current estimates of environmentally induced migration vary widely, from 25 million to almost 700 million. For appropriate policy responses, uncertainty in modeling approaches must be carefully accounted for.
- *Environmental data dominates in scenario building:* Scenarios in the literature right now are largely based on environmental scenarios of the IPCC rather than an analysis of current and expected migration trends and migration policy developments.. A more balanced integration of data and knowledge used to form policy approaches to manage environmentally induced migration is needed. Similarly, the lessons learned from experiences of using existing approaches and legal frameworks must be explored in greater depth, through both a research agenda and a policy dialogue process.

Factors driving environmental migration

Experts agreed that the mechanisms linking migration and environmental degradation and change are complex and interlinked. They identified some of the most important points that connect migration responses to environmental degradation and change.

- *Migration history and networks influence migration:* Research and policy approaches in the future should recognize the significance of context and history of environmental migration cases, including past migrations (networks). The specific contexts of migration patterns are critical to document and analyze. Migration patterns may vary over time in response to environmental stressors. Many forms of migration, such as circular migration which may be a response to environmental pressures in early stages, may be manifest later as flight. Pre-existing migration patterns can influence response to environmental stressors: The tendency to migrate in the face of environmental migration may increase when temporary migration is already an established phenomena.
- *Environmental change has a multiplier effect on other migration drivers.* More erratic weather, rising sea level and other climate change impacts exacerbate migration and environmental degradation. However, environmental change itself must combine with other factors to cause migration. The links between migration and environmental change are multidirectional, making it necessary to examine other factors such as faulty governance, poverty, lack of social cohesion and conflict, etc. Research is needed about the impacts of both migration and environmental policy on different groups of people, including who has adapted and who has been displaced. Poverty plays a significant linking role between environment and migration, with environmental impacts on livelihoods a key factor that can affect migration decisions.

Experts at the April Munich meeting also explored who is most likely to migrate in areas affected by environmental changes.

- *Mass migration as a homogenous group unlikely:* Different people in a community are affected in different ways: gender, age, socio-economic status all affect environmentally induced migration. This creates a highly differentiated group, each subcomponent having different policy implications. For example, in the face of slow-onset environmental change those who are able to move—those with money, social networks, and alternative livelihoods—will tend to migrate independently. The vulnerable poor, those with no capacity to move, the very young and the elderly may be left behind initially, and forced to resettle

later. Gender and demographic structure also play a role in environmentally induced migration patterns. Property rights, resource distribution and family roles affect men and women's migration patterns, particularly when the environment becomes a strong push factor.

- *Migration typologies differ, depending on the environmental stressor :. Research and policy must make distinctions about the type of environmental stressor and the nature of human movement. S*low and rapid onset environmental situations will contribute to different migration patterns, ranging from temporal displacement and permanent displacement, to cyclical migration and permanent migration both internally and internationally.

Policy scenarios and migration consequences

Experts discussed possible policy scenarios and migration consequences.

- *Migration needs to be discussed more within the context of adaptation strategies* to environmental and climate change. **The development community often characterizes migration as a failure of adaptation, rather than as a form of adaptation**. Similarly, governments do not widely view migration as an adaptation alternative, and very few national adaptation plans (NAPAs) mention migration or relocation options. Policy dialogue, especially at the national level, is needed to understand how climate change impacts affect livelihood potential. Migration is a livelihood issue not only reflecting where people are emigrating from, but also where they are immigrating to. To move discussions about environmentally induced migration closer to adaptation, policy makers need to understand thresholds and critical tipping points. These points help policy makers see the implications for migration and relocation in their adaptation plans.
- *Policy scenarios addressing environmentally related displacement and relocation* strongly affect existing social, economic and political structures. Rapid-onset events that lead to massive displacement or the impacts of resettlement on resident and migrating populations pose challenges for societal norms and standards, as well as property rights and political representation. The process of relocation has profound impacts on both displaced populations and receiving communities, but most policy focuses almost entirely on the process of the move rather than the process of what happens to resettled people in the longer term. Displacement and resettlement can be traumatic for affected communities, affecting the group identity and culture, livelihoods and social capital. Resource depletion in destination areas might increase. Humanitarian aid patterns under current policy tend to go to people who have been displaced or relocated, rather than to residents of receiving communities potentially aggravating scenarios for conflict. Looking at other forms of displacement and how policy has addressed it (i.e. in conflict situations) can help shape appropriate policies. In particular, research and policy dialogue should address displacement and resettlement with local governments including mayors and provincial governments.
- *Environmentally induced migration increases pressure in urban areas*. Evidence about current environmentally induced migration suggests that movement from rural to urban areas can add additional pressure to already fragile urban infrastructures and services. The public health, water, and sanitation sectors are particularly affected. Policy makers need to know the magnitude of migrants expected to arrive in urban areas. In most developing countries, the transition in development has not fully occurred yet. This implies that, coupled with growing environmental pressures, cities in developing countries could experience large-scale inflows of environmentally induced (and other) migrants. The policy challenge is to identify how environmental pressures translate into additional migrant flows to the cities.

5. Conclusions

At a recent meeting on migration and the environment organized by IOM and UNFPA in Bangkok in February 2007, experts identified three broad priority areas for further research:

1. Enhancing the knowledge base

How can we develop better data, concepts, and indicators to measure the likely impact of climate change and environmental degradation on global migration patterns ? Despite the existence of extensive data on climate change and changes in the environment, there is little reliable data collected linking migration to the environment. We need more analysis of the characteristics and needs of those most likely to be forced from their homes by environmental degradation. A mapping of ecologically vulnerable regions and migration patterns is needed, which also takes into account measurements of gradual changes in the environment, and the local social and economic context.

2. Evaluation of innovative pilot programmes and projects

How best can we develop measures to assist those who are most likely to be displaced due to the effects of climate change and environmental degradation, and what measures can be put in place to prevent displacement ? We need to understand better what policy and programme options have been developed at the local level specifically to assist those likely to be most vulnerable to the effects of climate change and environmental degradation. This means in particular conducting research in developing countries which are likely to be most adversely affected by environmental degradation.

3. Developing a long-term strategic policy perspective linking migration and environment policies

Migration and environment policies are currently rising separately on global agendas, but little has been done to link the two policy domains, either at the global, regional or national level. The issue is complicated by the fact that, in the case of migration, we are talking about both international migration policy responses and policies to address internal migration. How could a migration perspective be better factored into, national and international strategies and policy responses, which seek to address the implications of climate change and environmental degradation ? More analysis of the linkages between current migration and environmental policy approaches is needed. The creation of an international database/compendium of existing policies related to migration and the environment would be a useful first step in this direction.

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